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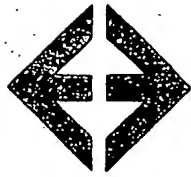
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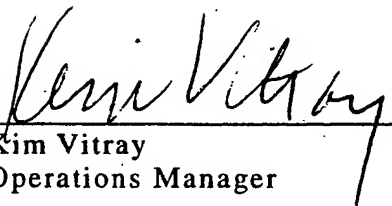
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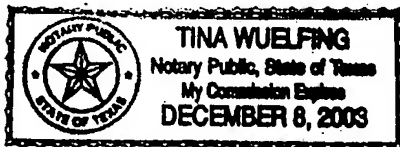
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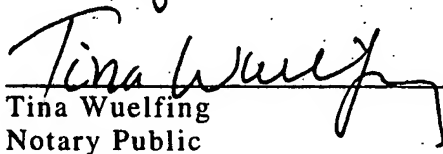
This is to certify that a professional translator on our staff who is skilled in the French language translated the enclosed French Patent No. 1,245.395 from French into English.

We certify that the attached English translation conforms essentially to the original French language.


Kim Vitray
Operations Manager

Subscribed and sworn to before me this 19th day of June, 2000.




Tina Wuelfing
Notary Public

My commission expires: December 8, 2003

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FRENCH REPUBLIC
MINISTRY OF INDUSTRY
DEPARTMENT OF INDUSTRIAL PROPERTY
PATENT NO. 1,245,395

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SWIMMING AND DIVING FIN

Inventors:	Paul Beauchat and Frederic Dumas residing in France (Bouches-du-Rhone)
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Swimming fins are in general formed by a surface which extends the foot and which is used for propelling the swimmer when the latter kicks with the legs or performs swimming movements.

However, given the position of the foot in comparison with the leg, it seems that all the surfaces of the fins are not used efficiently for propelling in diving as well as on the surface because one part of this surface exerts a negative thrust and this zone is that which surrounds and immediately prolongs the well-fitting pocket.

The object of the invention consists in achieving a swimming fin in which surfaces are eliminated that are not used for propelling in order to obtain in addition to lightening a very significant decrease in the fatigue and to limit displacement of water only [to that] necessary for propelling, while canceling the unused passive resistances.

It is characterized by means implemented, taken as a whole as well as separately, and more particularly by clearing or eliminating the points of negative thrust, either with the orifices

or cavities or with a reduction of the surfaces connecting the active part of the fin with the well-fitting pocket.

On the attached drawings given by way of nonlimiting example of one of the forms of execution of the object of the invention:

Figure 1 shows in a top view, a fin including a single central rib which widens at the end into a contoured flat surface;

Figures 2, 3 and 4 represent embodiments;

Figures 5 and 6 show schematically the thrust zones of a filled fin, and of a fin according to the invention.

The fin (Figure 1) is formed by a well-fitting pocket 1 with elastic band 2 encircling the heel. A single rib 3 extends the foot and widens at the end to form the propelling surface 4 with contouring 5, 6, giving it the appearance of a "fishtail" with lateral ribs 7, 8 reducing while being reduced so as to obtain progressive flexibility.

The fin may include a cavity 9 between two lateral ribs 10, 11 securing the propelling surface 12 (Figure 2) or even (Figure 3) including a median rib 13 with lateral ribs 14, 15 meeting the contoured propelling surface 16.

In every case, the surfaces situated at the level of or in front of the foot at point 17, the efficiency of which is zero, are decreased or eliminated.

The advantages of this fin are several.

Firstly, the ribs continue to play their known role, ensuring by their thickness and their sliding resistance a progressive flexibility in accordance with displacement in both directions to obtain sufficient amplitude for advancement. Thus, the surfaces are eliminated that are situated immediately in front of the foot, the efficiency of which is zero, and which cause useless fatigue to the swimmer, only preserving the surfaces 4, 12, 16 at the end of the fin which will be connected to the slipper 1 by simple ribs with a hydrodynamic profile.

With the current fins (Figure 4), when the user kicks with the foot or performs a swimming movement, the flat part is inclined and displaces a certain mass of water, arrows A, B. The result only from arrows A propels the swimmer towards the front. The B results are inoperative and absorb a large part of the force deployed, which is the generator of fatigue and even causes slowing down.

On the other hand, with the fin according to the invention, the surface 19 will integrally produce its active thrust effect, arrow A, and the passive resistances, arrow B, will be eliminated, the fluid passing freely to point C.

With even kicking speed, advance will increase and the fatigue will lessen. According to Figure 4, the paddle still with a cavity is provided with parallel ribs.

It is also possible to obtain similar results for any other arrangement allowing the fluid to freely pass at the ineffective points and such revealed by experiment. The ideal efficient shape would be that approaching as much as possible the caudal fin of the "tuna" in which the attachment to the foot would be formed by a very tapered connection.

However, the shapes, dimensions and arrangements of the different elements could vary within the limits of equivalents, such as, moreover, the materials used for their production, without for all that changing the general conception of the invention that has just been described.

Summary

Swimming and diving fin characterized by:

1. Fin eliminating the resistance created by the bending part called a curvature zone, produced by the connection of the comfortable pocket with the propelling surface in order to remove the negative effects of the parts that are not used in propelling;
2. Preparing openings or orifices at the points of negative thrust, that is, at the connection of the propelling fin with the well-fitting pocket;
3. Cavity allowing the water to pass freely under the pressure of the kicking, all while allowing the propelling surface to bend according to the amplitude corresponding to the effort received;
4. Contouring of the propelling surface with reinforcing ribs giving it an appearance of the caudal fin of a fish;
5. Combination and cooperation of the various elements described to achieve a swimming and diving fin.

Paul Beuchat and Frederic Dumas

By proxy: A. Roman

FIG 1

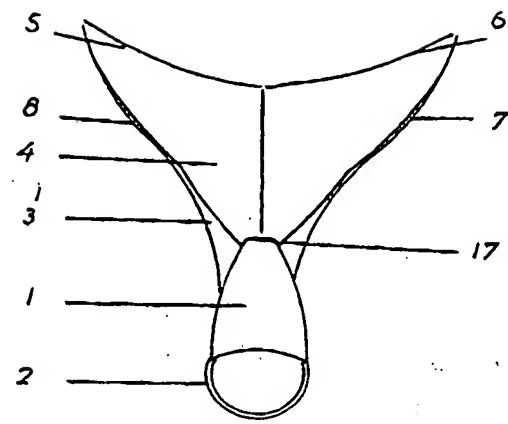


FIG 2

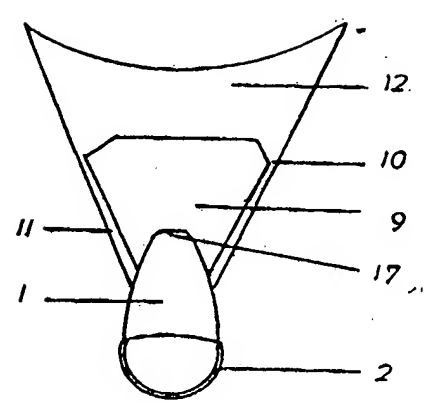


FIG 3

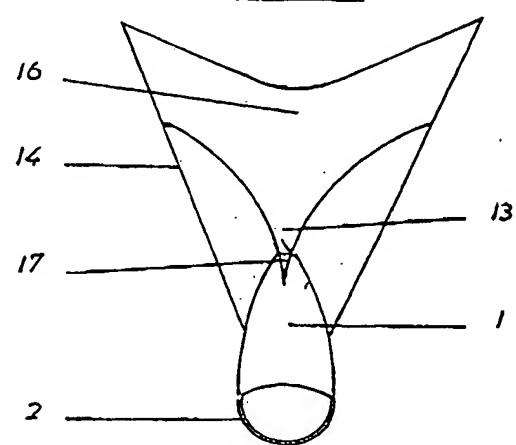


FIG 4

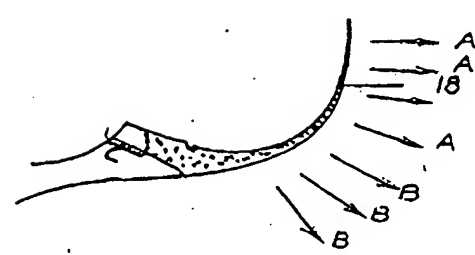
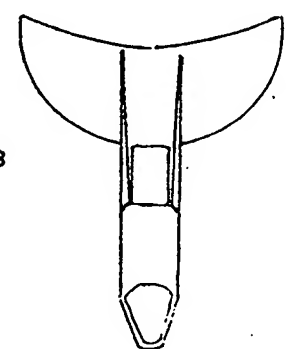


FIG 5

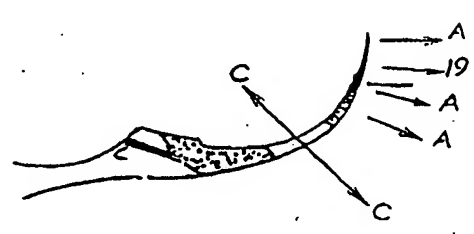


FIG 6